



# Fact Sheet

## Reporting Dioxin and Dioxin-like Compounds

### New Category for TRI and TURA Reporting - Dioxin and Dioxin-like Compounds:

On October 29, 1999, the Environmental Protection Agency (EPA) added the category "dioxin and dioxin-like compounds" to the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313 Chemicals list and set a threshold for Toxics Release Inventory (TRI) reporting. The Massachusetts Toxics Use Reduction Act, M.G.L. c. 21I (TURA), adopted these reporting requirements.

The reporting threshold for dioxin and dioxin-like compounds is 0.1 gram per calendar year. This category consists of 17 specific compounds, listed in Table 1. The reported amount is the sum of all 17 compounds.

### Classification of Dioxin and Dioxin-like Compounds:

The EPA classified dioxin and dioxin-like compounds as Persistent, Bioaccumulative, and Toxic (PBT) chemicals. PBT chemicals are a concern because they are highly toxic, do not break down easily in the environment, and accumulate in living tissues. The addition of this category to the federal and state chemical reporting requirements is part of a nationwide initiative to reduce the risks to human health and the environment from exposure to PBT pollutants.

Primary sources of dioxin and dioxin-like compounds are the byproducts of various combustion and chemical processes, such as:

- Incineration of municipal solid & medical waste
- Secondary copper smelting
- Land application of sewage sludge
- Cement kilns
- Coal fired power plants
- Chlorine bleaching of wood pulp

### Who Must File TURA Form S for Dioxin and Dioxin-like Compounds?

Under the reporting requirements, a facility must file a Form S for dioxin and dioxin-like compounds if it meets ALL THREE of the following criteria:

1. Has one of the following SIC codes: 10-14, 20-40, 44-51, 72, 73, 75, or 76; AND
2. Has 10 or more full-time employees or the equivalent of 20,000 hours per year; AND
3. Manufactures (including imports), processes or otherwise uses 0.1 grams per year or more of dioxin or dioxin-like compounds.

### Reporting Dioxin and Dioxin-like Compounds:

The amount of dioxin and dioxin-like compounds that is manufactured, including coincidental production, must be accounted for in determining if a facility meets the reporting threshold. This also includes dioxin and dioxin-like compounds created as a result of a product being processed or otherwise used.

Dioxin and dioxin-like compounds are NOT included in the threshold determination if they occur as a contaminant in the raw material being processed or otherwise used – such as at food processing plants where dioxin and dioxin-like compounds may be present in the incoming meat.

Chemicals or products that may contain dioxin and dioxin-like compounds, created during their manufacture, are listed in Table 2.

Industries most likely to coincidentally manufacture dioxin and dioxin-like compounds are listed in Table 3, along with an approximate level of activity that would reach the reporting threshold of 0.1 gram per year.

For examples of threshold determinations refer to the EPA "EPCRA – Section 313: Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category" document, available at:

<http://www.epa.gov/tri/guidance.htm>

*Contact the Massachusetts Department of Environmental Protection to request a TURA Form S reporting package at 617-292-5982 or [www.state.ma.us/dep/bwp/dhm/tura/turapubs.htm](http://www.state.ma.us/dep/bwp/dhm/tura/turapubs.htm)*

**Table 1. TRI and TURA reportable dioxin and dioxin-like compounds.**

CAS No.	Chemical Name	Abbreviated Name	# Label*
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin)	2,3,7,8-TCDD	17
40321-76-4	1,2,3,7,8-pentachlorodibenzo-p-dioxin	1,2,3,7,8-PeCDD	15
39227-28-6	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	1,2,3,4,7,8-HxCDD	7
57653-85-7	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	1,2,3,6,7,8-HxCDD	8
19408-74-3	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	1,2,3,7,8,9-HxCDD	9
35822-46-9	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	1,2,3,4,6,7,8-HpCDD	10
3268-87-9	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	1,2,3,4,6,7,8,9-OCDD	12
51207-31-9	2,3,7,8-tetrachlorodibenzofuran	2,3,7,8-TCDF	16
57117-41-6	1,2,3,7,8-pentachlorodibenzofuran	1,2,3,7,8-PeCDF	13
57117-31-4	2,3,4,7,8-pentachlorodibenzofuran	2,3,4,7,8-PeCDF	14
70648-26-9	1,2,3,4,7,8-hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF	3
57117-44-9	1,2,3,6,7,8-hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF	4
72918-21-9	1,2,3,7,8,9-hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF	5
60851-34-5	2,3,4,6,7,8-hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF	6
67562-39-4	1,2,3,4,6,7,8-heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF	1
55673-89-7	1,2,3,4,7,8,9-heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF	2
39001-02-0	1,2,3,4,6,7,8,9-octachlorodibenzofuran	1,2,3,4,6,7,8,9-OCDF	11

\*For filling out the distribution of each member of the category in section 1.2 of the Form R.

## Quantifying Dioxin and Dioxin-like Compounds:

It is recommended that a facility subject to reporting under TRI and TURA use the best readily available data applicable to their operations. The following methods are listed from most accurate to least accurate.

1. Use facility-specific monitoring data.
2. Use facility-specific emission factors.
3. Use EPA default emission factors provided in the EPA guidance document.

## Modification of Reporting Procedures:

Reporting procedures for PBTs have been modified and apply to the dioxin and dioxin-like compounds category.

De minimis Exemption Eliminated: The amount of all dioxin and dioxin-like compounds, regardless of how minimal the concentration, must be reported.

Range Codes Prohibited: An actual amount must be reported for dioxin and dioxin-like compounds. Using range codes for reporting is not an option for this category.

Data Precision: Dioxin and dioxin-like compounds must be reported precisely, based on the accuracy of supporting data. The minimum reportable amount is 0.0001 grams. If the amount is less than 0.00005 grams, "0" should be recorded rather than "N/A" (not applicable).

Exclusion from Form A: The use of Form A for reporting dioxin and dioxin-like compounds is prohibited. Form R must be used.

**Table 2. EPA identified chemicals/products that may contain dioxin and dioxin-like compounds.**

CAS No.	Chemical/Product	Typical Uses
118-75-2	Chloranil	dyes, pigments, pesticides
87-86-5	Pentachlorophenol (PCP)	wood preserving, pesticides
107-06-2	Ethylene dichloride (EDC) (mftd. by oxychlorination)	vinyl chloride production, gasoline, paints, varnishes, metal degreasing, scouring compounds, organic synthesis, solvent, fumigant
94-75-7	2,4-D	pesticides
1928-43-4	2,4-D Ester herbicides	pesticides
	Bleached chemical wood pulp	white paper products

## Nuances in Filing Form S:

The thresholds for PBT classified chemicals are the same for state and federal regulations; therefore many Massachusetts companies are required to file both TRI Form R and TURA Form S. Though the reporting procedures for both forms are similar, there are some differences in filing Form S. These are:

- Massachusetts TURA regulations have a broader SIC coverage than the federal EPCRA regulations.
- A facility filing a Form S must report chemical use as well as waste/byproduct generation.

## Example:

A Massachusetts company has an SIC code covered by both TURA and TRI. It has more than 10 full-time employees and combusts 900,000 gallons of fuel oil annually in a utility boiler. Using an emission factor from the EPA dioxin guidance document, the amount of dioxin and dioxin-like compounds produced is:

$(900,000 \text{ gal}) \times (0.1 \text{ g dioxin}/8,300,000 \text{ gal fuel oil}) = 0.1084 \text{ g of dioxin and dioxin-like compounds coincidentally manufactured.}$

The facility exceeded the reporting thresholds for the dioxin and dioxin-like compounds category and therefore must submit a Form R and Form S.

## OTA Assistance Services

*The Office of Technical Assistance (OTA) provides one-on-one technical assistance on pollution prevention (P2), toxics use reduction (TUR) and compliance – as well as guidance in the form of workshops, case studies, manuals and other materials. OTA helps toxics users in Massachusetts to identify TUR/P2 opportunities within their operations and initiate planning efforts. Contact OTA at:*

*251 Causeway Street, Suite 900, Boston, MA 02114  
Phone: (617) 626-1060 or on-line at  
[www.state.ma.us/ota](http://www.state.ma.us/ota)*

**Table 3. Processes that may coincidentally manufacture dioxin and dioxin-like compounds and estimated level of activity that triggers the reporting threshold, listed by industry and SIC.**

Industry and SIC	Annual Level of Indicated Activity <sup>◊</sup>
Pulp Mills, Paper Mills, Lumber & Wood Products: 24XX, 2611, 2621	Wastewater discharge: 250 million gal
	Wastewater sludge land disposal: 441,000 lbs
	Wood waste & bark burned in boiler: 92 million lbs
Secondary Smelting & Refining of Non-ferrous Metals: 3341	Secondary Aluminum smelting: 5 million lbs
	Secondary Lead smelting: See EPA guidance document
	Secondary Copper smelting: 2.5 million lbs
Cement Kilns: 3241- Not combusting hazardous waste	Cement clinker production: 72 million lbs
Utilities: 4911, 4931, 4939	Combusting coal in utility boiler: 64,500 tons
	Combusting fuel oil in utility boiler: 8.3 million gal
	Combusting wood in utility boiler: 13.5 million lbs-dry 14.4 million lbs-wet
Hazardous Waste Combustion Facilities: 4953 Cement kilns supplemental fuel: 3241 Utilities supplemental fuel: 4911, 4931, 4939	Hazardous waste combustion: 3.5 million lbs
	Hazardous waste combustion cement kilns: 31 million dscm*
	Supplemental fuel, excluding cement kilns: 18 million lbs
Solid Waste Combustion: 4953	Combusting solid waste: 250 tons
Crematoria: 7261	Incinerating at 1400 F: 5.7 million dscm*
	Incinerating at 1600 F: 3.5 million dscm*
	Incinerating at 1800 F: 4.2 million dscm*
Medical Waste Incineration Facilities	Incinerating medical waste: Contact the EPA
Combustion of Fuel Oil	Combusting fuel oil: 8,300,000 gal

\*dry standard cubic meters of stack gas flow

<sup>◊</sup> The projections were obtained from EPA literature or calculated using emission factors from EPA publications, including the guidance document.